

Department of Resources Recycling and Recovery

SCOPE OF WORK

Tire- Derived Aggregate Civil Engineering Technology Center and Education Services

I. INTRODUCTION/OBJECTIVES

CalRecycle has sponsored numerous research and direct field applications of Tire-Derived Aggregate (TDA) in civil engineering projects in California over the past 20 years. The experience and knowledge obtained during these studies are invaluable for future successful TDA usage and have led to a new TDA grant program which is currently being implemented.

Establishing a TDA Technology Center will assist CalRecycle in increasing the use of TDA in civil engineering applications. Through the TDA Technology Center, the Contractor will provide support to both private and public engineers to gain acceptance of TDA as a viable civil engineering construction material and thereby create more opportunities for TDA projects.

The education services aspect of the contract will be a follow up to the university curriculum development project completed by the California State University, Chico Research Foundation (CSUCRF) in 2009. It will include a survey of the professors previously trained under the 2009 contract and evaluate if they are including the TDA curriculum in their engineering classes.

Based on the survey results, education services will be developed which may include the following: various educational support documents, curriculum assistance, and possibly additional professor training in teaching civil engineering students the benefits of using TDA and how to design projects using this material.

This Scope of Work (SOW) addresses the activities for the TDA Technology Center and Curriculum Services for the period of January 2012 through May 2014.

II. WORK TO BE PERFORMED

All work under this contract shall be performed in accordance with approved work plans developed by CalRecycle and the instructions accompanying or included in work orders issued under the contract. The contractor shall assist CalRecycle staff with the following tasks:

- 1. Establish the TDA Technology Center.** The objectives of this Center would include:
 - a.** Assist in TDA technology transfer and training activities for State and local government officials and staff;
 - b.** Complete field and laboratory studies and investigations to assist CalRecycle in promoting TDA applications in civil engineering; and
 - c.** Create and maintain a TDA Technology Center website to support TDA applications.

2. Education Services: Curriculum Refinement, Development and Training

- a.** Complete a follow-up study of the existing university curriculum of TDA applications in civil engineering;
- b.** Develop supplemental educational materials for the existing TDA curriculum; and
- c.** Conduct professor training and dissemination of educational and informational materials on TDA.

3. Prepare and submit quarterly reports to CalRecycle

III. TASKS IDENTIFIED

All tasks under this contract will be performed through work orders issued by CalRecycle to the contractor. The contractor will initially receive a planning work order that includes a proposed scope of work (SOW) and other pertinent information specific to each task. Work will be carried out in accordance with work plans approved by CalRecycle staff.

CalRecycle staff will coordinate with the contractor and negotiate any changes to the work plan, which shall be documented through a change order and signed by both parties.

Types of work anticipated include, but are not limited to:

Task 1: Establish the TDA Technology Center at the California State University, Chico Research Foundation (CSUCRF)

a. Assist in TDA technology transfer and training activities for State and local government officials and staff

TDA Technology Center staff will handle questions about TDA and provide technical assistance to CalRecycle, and other State or local government agencies. It would also include providing workshops and seminars to professionals and assisting CalRecycle staff when meeting with other state agencies, such as the Department of Transportation (Caltrans).

b. Laboratory and Field Studies and Investigations

Studies and investigations involving the use of TDA will be completed at the request of CalRecycle's Contract Manager. As barriers to the use of TDA are identified by State and local governments, CalRecycle may request the TDA Technology Center to investigate possible solutions. This could include:

- Continue to monitor the field performances of past testing walls and other TDA test sites in California.

- Provide investigations of the field projects.
- Develop guidance for the TDA sieve analysis testing methodology to achieve better compliance with TDA material specifications. This task would utilize CSUCRF's or other universities testing facilities to perform necessary laboratory tests to support State or local agencies on TDA projects. Additional equipment may be purchased to enhance the technical support capability of the TDA Technology Center subject to approval by the CalRecycle Contract Manager.
- Writing papers, technical reports, and other publications to enhance the knowledge of TDA as construction materials and presenting the documents at engineering conferences and workshops.

c. Provide a Knowledge-based Website to Support TDA Applications

This task involves the creation and maintenance of a TDA Technology Center website that will host knowledge, training materials, and the latest news on TDA. It will be linked to the CalRecycle website and the CSUCRF's website.

Task 2: Education Services

a. Determine the status of and, if necessary, refine the existing University curriculum for TDA applications in civil engineering

This task involves a follow up investigation of the 2007-2009 university curriculum development project completed by CSUCRF under a previous CalRecycle contract. A survey of the professors who attended the curriculum training workshops completed under the previous contract will be conducted to determine the current status of TDA education and training needs. Understanding the needs and lessons learned from the previous curriculum development project will ensure the TDA curriculum is in tune with the next generation of civil engineers.

b. Develop supplemental education materials to support TDA curriculum and on-line classes planned in the future

Based on the results of Task 2a, this task involves the revision of the existing, or the development of new, educational materials that will support the TDA curriculum. These materials could include, but are not limited to: study guides, reference materials (i.e., textbooks and handbooks), and other materials that can be used as a teaching aide for the university curriculum already developed under the previous CSUCRF contract referenced in Subtask 2a above. These materials will be based on information already developed by CalRecycle as well as information developed by new research. These materials may be utilized for future classroom and on-line engineering classes that the CSUC Engineering Department or other institutions may be

considering. These materials could also be used by practicing engineers when designing TDA projects.

c. Conduct professor training and dissemination of educational/informational materials

At the direction of the CalRecycle Contract Manager, this task will involve conducting professor training seminars, reproducing educational materials, and/or distribution of materials developed under Task 2b. CalRecycle's Contract Manager must approve all revisions and final drafts prior to reproduction or dissemination.

Task 3: Quarterly Reports and Final Report

The quarterly reports, which will provide measurable performance data, will include, but not be limited to, the progress made on the project. Information regarding the number of publications and related information that are distributed must be provided. A final report will be required that summarizes the activities and findings. Upon request, the final report will be presented at the CalRecycle Monthly Public Meeting.

IV. CONTRACT/TASK TIME FRAME

It is anticipated that this contract will be awarded January 2012 and expire May 2014. CalRecycle staff will develop a work order for each task under the contract and the deliverables and time frame for the respective task(s) will be included in the work order.

The following provisions will be included in the Terms and Conditions or Special Terms and Conditions of the Contract.

V. COPYRIGHT PROVISION

The contractor shall establish for CalRecycle good title in all copyrightable and trademarkable materials developed as a result of this Scope of Work. Such title shall include exclusive copyrights and trademarks in the name of the State of California, Department of Resources Recycling & Recovery (CalRecycle).

VI. CALIFORNIA WASTE TIRES

Unless otherwise provided for in this Scope of Work, in the event the contractor and/or subcontractor(s) purchase waste tires or waste-tire derived products for the performance of this Scope of Work, only California waste tires and California waste tire-derived products shall be used. As a condition of payment under the agreement, the contractor shall be required to provide documentation substantiating the source of the tire materials used during the performance of this Scope of Work to the contract manager.

VII. WASTE REDUCTION AND RECYCLED-CONTENT PRODUCT PROCUREMENT

In the performance of this Agreement, Contractor shall use recycled content, used or reusable products, and practice other waste reduction measures where feasible and appropriate.

Recycled Content Products: All products purchased and charged/billed to CalRecycle to fulfill the requirements of this contract shall be Recycled Content Products (RCPs), or used (reused, remanufactured, refurbished) products. All RCPs purchased or charged/billed to CalRecycle to fulfill the requirements of the contract shall have both the total recycled-content (TRC) and the postconsumer content (PC) clearly identified on the products. Specific requirements for the aforementioned purchases and identification are discussed in the Terms and Conditions of the Contractual Agreement under Recycled-Content Product Purchasing and Certification.

The Contractor should, at a minimum, ensure that the following issues are addressed, as applicable to the services provided:

VIII. WRITTEN DOCUMENT PROVISION

All documents and/or reports drafted for publication by or for CalRecycle in accordance with this contract shall adhere to CalRecycle's *Guidelines For Preparing Reports (available upon request)* and shall be reviewed by CalRecycle's Contract Manager in consultation with one of CalRecycle editors.

In addition, these documents and/or reports shall be printed double-sided on one hundred percent (100%) recycled-content paper. Specific pages containing full-color photographs or other ink-intensive graphics may be printed on photographic paper. The paper should identify the postconsumer recycled content of the paper (i.e., "printed on 100% postconsumer paper"). When applicable, the contractor shall provide the contract manager with an electronic copy of the document and/or report.

To the greatest extent possible, soy ink instead of petroleum-based inks should be used to print all documents